

# Smoldering Issues of Fire Performance Evaluation

Session 6.1, part 3:

## **NFPA 285 in the Field** An Update of Local Adoption



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# Is NFPA 285 New?

## Energy Crisis:

Leads to increased exterior insulation applications

**1988:**

Uniform Building Code adopts UBC 17-6

**1997:**

Uniform Building Code adopts UBC 26-9

**2000:**

IBC begins requiring NFPA 285 testing

1970's

1980's

1990's

2000's

2010's

**Late 70's:**

SPI develops full-scale test



Full-scale Fire Test  
UBC 17-6 / UBC 26-4

**1998:**

NFPA adopts UBC 26-9 as NFPA 285



Reduced-scale Fire Test  
UBC 26-9 / NFPA 285

**2012:**

IBC expands NFPA 285 testing to WRB

# 1974 Federal Trade Commission Ruling

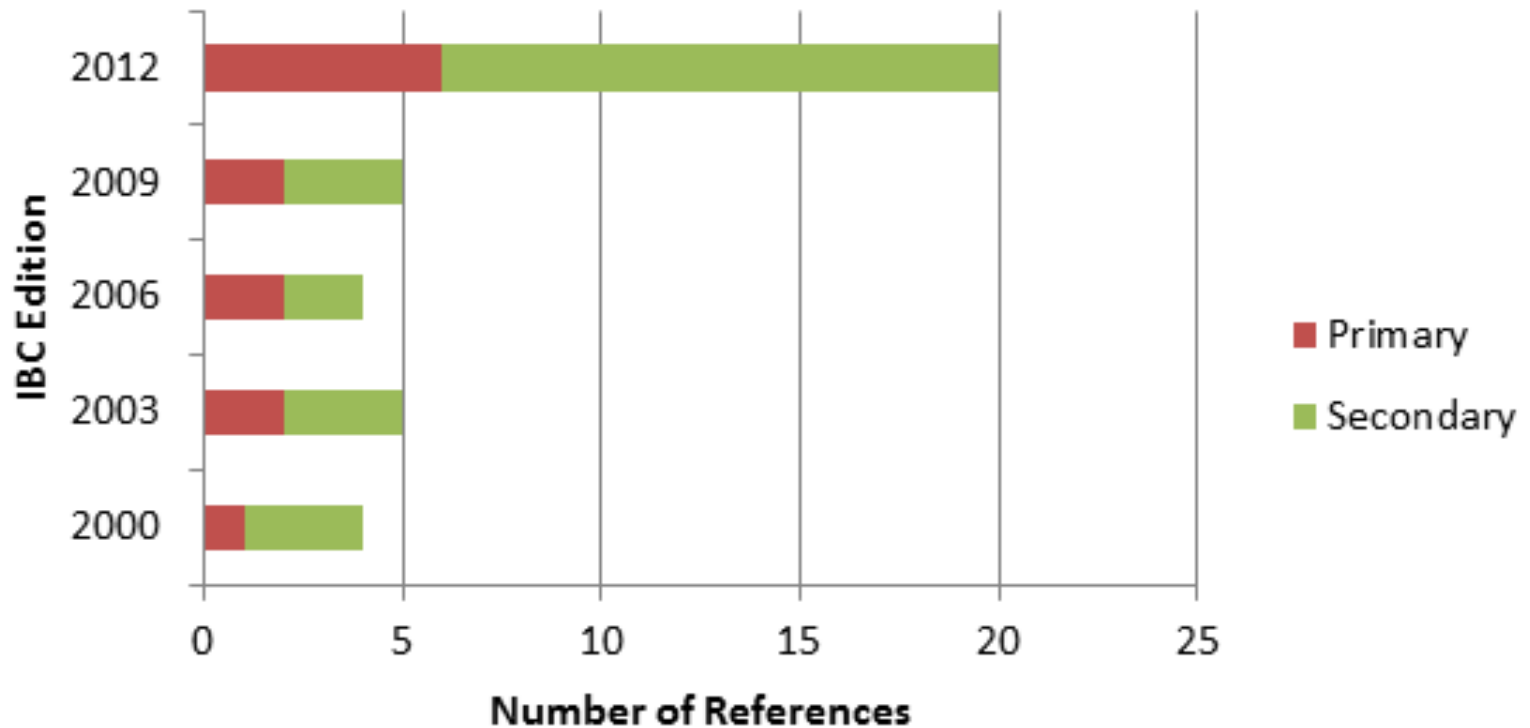
IN THE MATTER OF  
THE SOCIETY OF THE PLASTICS INDUSTRY, INC., ET AL.  
CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATION OF THE  
FEDERAL TRADE COMMISSION ACT

*Docket C-2596. Complaint, Nov. 4, 1974—Decision, Nov. 4, 1974*

A Consent Decree including 25 Manufacturers and SPI, requiring:

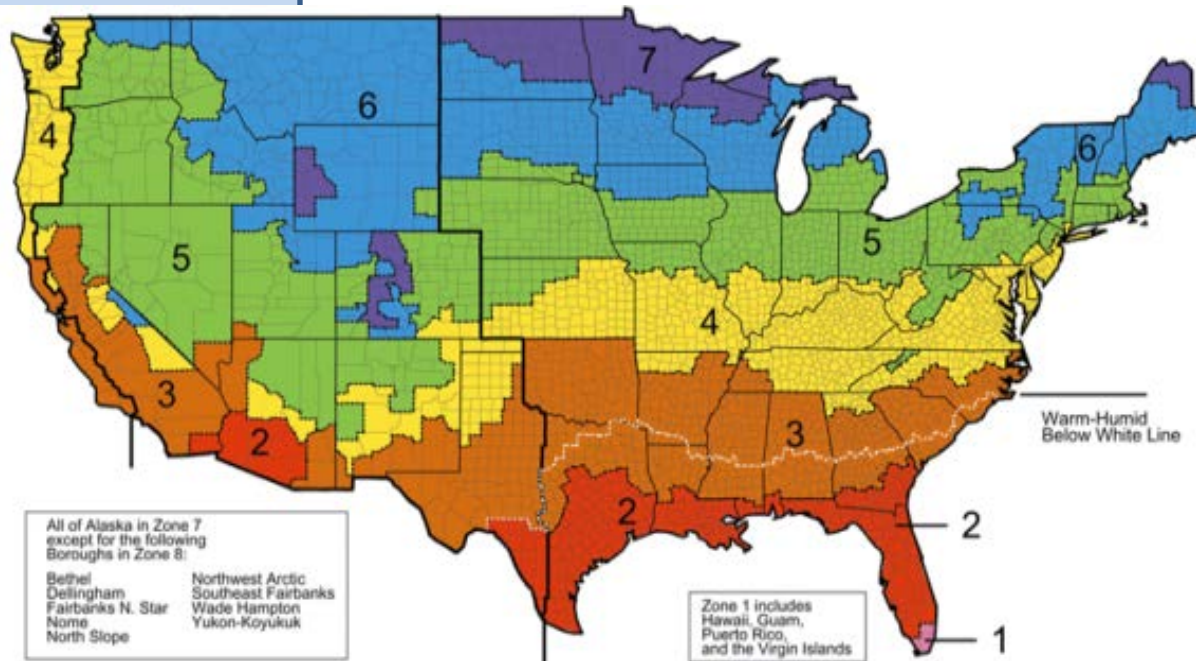
- Notification of prior purchasers of their foams
- Sponsoring product research (\$5M)
- Resulted in a 1980 Final Report of the Products Research Committee

# Growth of NFPA 285 Triggers



# Increasing Thermal Resistance

Increasing Mandatory use of Continuous Insulation (ci) in EVERY climate zone



Climate Zone	IECC 2009	IECC 2012
8	R13 + R7.5ci	R13 + R7.5ci
7	R13 + R7.5ci	R13 + R7.5ci
6	R13 + R7.5ci	R13 + R7.5ci
5	R13 + R7.5ci	R13 + R7.5ci
4	R13 + R7.5ci	R13 + R7.5ci
3	R13 + R3.8ci	R13 + R5ci
2	R13	R13 + R5ci
1	R13	R13 + R5ci

Climate Zone	ASHRAE 90.1 2010	ASHRAE 90.1 2012
8	R13 + R7.5ci	R13 + R18.8ci
7	R13 + R7.5ci	R13 + R12.5ci
6	R13 + R7.5ci	R13 + R12.5ci
5	R13 + R7.5ci	R13 + R10ci
4	R13 + R7.5ci	R13 + R7.5ci
3	R13 + R3.8ci	R13 + R5ci
2	R13	R13 + R3.8ci
1	R13	R13

# **State and Local Adoption of the 2012 IBC**

## International Codes-Adoption by State (February 2015)

ICC makes every effort to provide current, accurate code adoption information. Not all jurisdictions notify ICC of code adoptions. To obtain more detailed information on amendments and changes to adopted codes, please contact the jurisdiction. To submit code adoption information: [www.iccsafe.org/adoptions](http://www.iccsafe.org/adoptions)

X = Effective Statewide A = Adopted, but may not yet be effective L = Adopted by Local Governments S = Statewide adoptions with limitations XL = Adopted by the State for Local Adoption  
12= 2012 Edition 09 = 2009 Edition 06 = 2006 Edition 04 = 2004 Edition 03 = 2003 Edition 00 = 2000 Edition

\* The title of the 2000 and 2003 IBC Code was changed to IWUC in the 2006 version.

Jurisdiction	IBC	IRC	IFC	IMC	IPC	IPSDC	IFGC	IBC	IECC	IPMC	IEBC	ISPSC	ICCP	IWUC	IZC	ICC 700
Alabama	S09, L	L	S09, L	S09, L	S09, L	L	S09, L	L	L	L	L		L		L	
Alaska	X09	L06L09	X09	X09				L06								
Arizona	S09, L	S09, L	S06, L	S09, L	S09, L	L	S09, L	L	S09, L	L	L	L	L	L	L	L
Arkansas	X12	X12	X12	X09	X06	L	X06		X09	L	L					
California	X12	X12	X12							L	X12	L		L		
Colorado	S12, L	S12, L	S12, L	S12, L	X12, L	L	X12, L	L	S12, L	L	S12, L	L12	L	S12, L	L	L
Connecticut	X03	X09	X03	X03	X03				X09	L	X03					
Delaware	L12	L12	L12	L12	S12		L12		S12	L	L					
District of Columbia	X12	X12	X12	X12	X12		X12	X12	X12	X12	X12	X12				
Florida	X09	X09		X09	X09		X09	X	X09	L09	X09					
Georgia	X12	X12	X12	X12	X12		X12		X09	XL12	XL12	XL12		XL12		XL08
Hawaii	X06	X06, L06							X06, L09							
Idaho	X12	X09	X12	X12			X12		X09		X12					L
Illinois	S09, L	L	S09, L	S09, L	L	L	S09, L		X12	S09, L	S09, L	L12	L	L	L	
Indiana	X12	X03	X12	X12	X06		X12									
Iowa	S09, L	S09, L	X09	S09, L	L	L	L		X12	L	S09, L				L	
Kansas	L	L	S06, L	L	L	L	L		S09, L	L	L					
Kentucky	X12	X12	X12	X12					X09/X12	L						
Louisiana	X12	X12	L	X12			X12		X09, L	L	X12					
Maine	X09	X09							X09		X09					
Maryland	X15	X15		X15	L15	L	L	X	X15	X15	X12					
Massachusetts	X09	X09		X09					X12		X09					
Michigan	X12	X09	L	X12	X12	L	X12		X09	L	X12		L			
Minnesota	X06	X06	X06	X00			X06			L						
Mississippi	S12, L	S12, L	S12, L	S12, L	S12, L	L	S12, L		L	L	S12, L		L			
Missouri	S12, L	S00, L	L	S12, L	S12, L	L	S00		S12	L	L		L	L	L	
Montana	X12	X12	L	X12			X12		X12		X12					
Nebraska	S09, L	S09, L	L	L	L	L	L		S09, L	L	S09, L			L	L	
Nevada	S12, L	S12, L	S12, L	L	L	L	L		S12, L	L	L		L	X09, L		
New Hampshire	X09	X09	L	X09	X09			L	X09	L	X09					
New Jersey	X09	X09	X06	X09			X09		X09	L						
New Mexico	X09	X09	X03	L	L		L		X09	L	X09		L	L		
New York	X06	X06	X06	X06	X06		X06		X09	X06	X06					
North Carolina	X09	X09	X09	X09	X09		X09	X	X09		X12					
North Dakota	S12, L	S12, L	L	S12, L			S12, L		S12, L	L	L					
Ohio	X09	A09	X09	X09	X09		X09		X09	L					L	
Oklahoma	S09, X	S09, X	S09, X	S09, X	S09, X	L	S09, X		S03, L	S06, L	S09, X		S06, L	L	L	
Oregon	X12	X09	X12	X12			X12	X	X12							
Pennsylvania	X09	X09	X09	X09	X09		X09		X09	L	X09		X09	X09		
Rhode Island	X12	X12		X12	X12		X12	X12	X12	X12						
South Carolina	X12	X12	X12	X12	X12		X12		X09	XL12	XL12	XL12	XL12			
South Dakota	S12, L	L	S09, L	S09, L		L	L		L	L12	L		L	L		
Tennessee	S06, L	X09	S06, L	L	L		L		X06	L	L	L12	L	L	L	
Texas	X06	X00	L06	L06	L06	L	L06		X09	L	L06	L12	L	L	L	
Utah	X12	X12	X12	X12	X12		X12		X12					X06		
Vermont	X12	L			X12				X09							
Virginia	X12	X12	X12	X12	X12		X12		X12	X12	X12	X12				
Washington	X12	X12	X12, L	X12	L12		X12, L	L	X12, L12	L	X12, L		L	L09		
West Virginia	X12	X09		X12	X12		X12		X09	X12	X12					
Wisconsin	X09		L	X09			X09		X09		X09					
Wyoming	X12, L	L12	X12, L	X12, L	L12	L12	X12, L		L12	S12	S12, L	L12	L12	L12	L12	

# **Modifications by State and Local AHJ's**

**1403.5 - Water Resistive Barriers (WRB's)**

**1407.10.4 - (MCM) Metal Composite Materials**

**1409.10.4 - (HPL) High-Pressure Decorative Laminates**

**1509.6.2 - (Rooftop) Mechanical Equipment Screens**

**2603.5.5 - (Foam Plastics) Foam Plastics**



# Washington State Building Code

Effective Date July 1, 2013 incorporating 2012 IBC

## 1403.5 (WRB's) - **Modified**

- Similar to 2015 IBC Exception Language

*1409.10.4 (HPL) - Not Modified*

*1407.10.4 (MCM) - Not Modified*

*1509.6.2 (Rooftop) - Not Modified*

*2603.5.5 (Foam Plastics) - Not Modified*

# 2013 DC Building Code Supplement

Effective Date March 28, 2014 incorporating 2012 IBC

## 1403.5 (WRB's) - **Deleted**

- WRB's not a trigger NFPA 285 Compliance

*1407.10.4 (MCM) - Not Modified*

*1409.10.4 (HPL) - Not Modified*

*1509.6.2 (Rooftop) - Not Modified*

## 2603.5.5 (Foam Plastics) - **Modified**

- Exemption for NFPA 285 trigger in fully sprinklered buildings
- Key discussion for the 2603.5.5 acknowledgement of the height restrictions in DC (approximately 100ft in DC)

# 2012 Virginia USBC

Effective Date July 14, 2014 incorporating 2012 IBC

## 1403.5 (WRB's) - **Deleted**

- WRB's not a trigger NFPA 285 Compliance

## 1407.10.4 (MCM) - **Modified**

- Exemption for fully sprinklered buildings

## *1409.10.4 (HPL) - **Not Modified***

## *1509.6.2 (Rooftop) - **Not Modified***

## 2603.5.5 (Foam Plastics) - **Modified**

- Exemption for NFPA 285 trigger in fully sprinklered buildings
- No discussion of height limitation

# 2014 Indiana Building Code

Effective Date December 1, 2014 incorporating 2012 IBC

## 1403.5 (WRB's) - **Modified**

- Exception for Fully Sprinklered Buildings

## 1409.10.4 (HPL) - **Modified**

- Exception for Fully Sprinklered Buildings

## 1407.10.4 (MCM) - **Modified**

- Exception for Fully Sprinklered Buildings

## 1509.6.2 (Rooftop) - **Modified**

- Exception for Fully Sprinklered Buildings

## 2603.5.5 (Foam Plastics) - **Modified**

- Exception for Fully Sprinklered Buildings
- No discussion of height limitation

<http://register.dls.virginia.gov/details.aspx?id=4357>

# Additional AHJ's reviewing NFPA 285 Triggers and Modifications

- Massachusetts
- Minnesota
- Oregon
- Others?

# ICC Code Development

Committee Action Hearings (CAH)

April 19 - 29, 2015

Memphis Cook Convention Center  
Memphis, Tennessee



The screenshot shows the top portion of the ICC website. The navigation bar is dark green with white text for 'My ICC', 'Store', 'Contact Us', and 'cdpACCESS', along with a search icon. Below the navigation bar is a large banner image of a person's hands writing on a document next to a laptop. Overlaid on the bottom right of the banner is the text 'Current Code Development Cycle'. To the right of the banner, there are vertical buttons for 'cdpACCESS', 'FEEDBACK', and 'LIVE CHAT'. Below the banner is a breadcrumb trail: 'ICC > Codes & Tech Support > Codes > Code Development > Current Code Development Cycle'.

## News

**Online Floor Modification Submission Opened April 1.** New to the code development process, floor modifications to the Group A Codes can only be submitted at [cdpACCESS.com](http://cdpACCESS.com). Individuals who submit floor modifications must attend the 2015 Committee Action Hearings, April 19-28 in Memphis, Tenn. For details on floor modifications, [click here](#). To view the code changes and register to attend the hearings, [click here](#).

**Proposed Changes to 2015 Group A Codes Available for Review.** [Click here](#) to view the monograph of changes that was posted on March 13 to assist in locating all of the proposed code changes to be considered at the Committee Action Hearings at the Memphis,

# 2018 IBC Code Change Proposals

<b>G 5-15(DuPont)</b>	<b>202 Define Combustible</b>
<b>FS 3-15(NAIMA)</b>	<b>703.5.1 Revised “noncombustible”</b>
<b>FS 146-15(NIBS)</b>	<b>1403.5 Flashing not WRB</b>
<b>FS 147-15(GBH)</b>	<b>1403.5 ASTM E84 Type X substrate</b>
<b>FS 148-15(DuPont)</b>	<b>1403.5 Exception for 703.5.1 &amp; .2</b>
<b>FS 149-15(XPSA)</b>	<b>1403.5 Source, Agency, EJ (?)</b>
<b>FS 173-15(XPSA)</b>	<b>2603.5.5 ASTM E 84 &amp; NFPA 285</b>
<b>FS 174-15(NIBS)</b>	<b>2603.5.5 Sprinkler Exception</b>

# 2018 IBC Code Change Proposals

## G 5-15(DuPont)      202 Define Combustible

### SECTION 202 DEFINITIONS

**COMBUSTIBLE** Any material not defined as noncombustible.

**NONCOMBUSTIBLE** Elementary or composite materials that are not capable of undergoing combustion under specified conditions.

**Reason:** This proposal adds two needed definitions to the code. There is significant confusion in the industry on how to define combustible and noncombustible materials. The proposed language was developed by considering the testing requirements in Section 703.5 and the definition in *ASTM E176 Terminology of Fire Standards*.

**Cost Impact:** Will not increase the cost of construction  
The proposal adds clarity through definitions only, and does not change code requirements.



# 2018 IBC Code Change Proposals

## FS 146-15(NIBS) 1403.5 Flashing not WRB

### 2015 International Building Code

#### Revise as follows:

**1403.5 Vertical and lateral flame propagation.** Exterior walls on buildings of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible *water-resistive barrier* in accordance with Section 1404.2 shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. For the purposes of this section, fenestration products and flashing of fenestration products and water resistive barrier flashing and accessories at other locations, including through-wall flashings, shall not be considered part of the *water-resistive barrier*.

#### Exceptions:

1. Walls in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has a wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1405.2.
2. Walls in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* has a peak heat release rate of less than 150 kW/m<sup>2</sup>, a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E 1354 and has a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723. The ASTM E 1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m<sup>2</sup>.

**Reason:** This proposal clarifies the intention of the current code that the trigger for requiring NFPA 285 testing is the water-resistive barrier material and not its accessories. It extends to the excepted accessories specifically mentioned to include flashings that are not associated with fenestration.

# 2018 IBC Code Change Proposals

## FS 174-15(NIBS) 2603.5.5 Sprinkler Exception

### 2015 International Building Code

#### Revise as follows:

**2603.5.5 Vertical and lateral fire propagation.** The exterior wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

#### Exceptions:

1. One-story buildings complying with Section 2603.4.1.4.
2. Wall assemblies where the foam plastic insulation is covered on each face by not less than 1-inch (25 mm) thickness of masonry or concrete and meeting one of the following:
  - 2.1. There is no airspace between the insulation and the concrete or masonry.
  - 2.2. The insulation has a flame spread index of not more than 25 as determined in accordance with ASTM E 84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).
3. In other than *high rise building*, buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1

**Reason:** Currently, Section 2603.5 requires all foam plastic exterior insulation materials to conform to the limits of NFPA 285. This test replicates the response of materials to a fire extending through an exterior window of a building. The code does not differentiate as to whether there is a potential for such a fire to occur in a building. Flashover fires that would cause the flame to break out of the building will not occur in a building that has a fully operational sprinkler system.

# 2018 IBC Code Change Proposals

<b>G 5-15(DuPont)</b>	<b>202 Define Combustible</b>
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<b>FS 149-15(XPSA)</b>	<b>1403.5 Source, Agency, EJ (?)</b>
<b>FS 173-15(XPSA)</b>	<b>2603.5.5 ASTM E 84 &amp; NFPA 285</b>
<b>FS 174-15(NIBS)</b>	<b>2603.5.5 Sprinkler Exception</b>